COMPLETE LISTING OF CLAIMS

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Claims 1-20 (Canceled)

21. (New) A microfluidic device comprising a planar substrate having at least one microchannel structure, wherein the microchannel structure comprises a sample inlet port and an outlet port (MS-port) that is capable of being interfaced with a mass spectrometer and centrifugal force is used for liquid transportation within at least a part of said microchannel structure.

22. (New) The device of claim 21, wherein transportation of liquid within at least a part of said microchannel structure is by capillary action, hydrodynamic pressure or electrokinetics.

23. (New) The device of claim 21, wherein the microchannel structure extends radially in the substrate with the MS-port being located at an outer position and the inlet port being at an inner position.

24. (New) The device of claim 21, wherein the microchannel structure is fabricated in plastics material.

25. (New) The device of claim 21, wherein the planar substrate is circular.

26. (New) The device of claim 21 further comprising two or more of said microchannel structures.

27. (New) The device of claim 23 further comprising two or more of said microchannel structures wherein the microchannel structures are annularly arranged around the central axis.

28. (New) The device of claim 21, wherein the MS-port comprises an electrospray arrangement.

29. (New) The device of claim 21, wherein the MS-port comprises an EDI arrangement with an EDI area.

30. (New) The device of claim 29, wherein the EDI arrangement is an LDI arrangement.

31. (New) The device of claim 21, wherein the planar substrate contains in the surface of one side at least a part of said microchannel structure, and a matching lid which on one side comprises the remaining parts of the microchannel structure so that said microchannel structure is completed when said two sides mate to each other, the part of the MS-port comprising the EDI area being present either in the substrate or in the lid.

32. (New) The device of claim 31, wherein the substrate and said lid are separable from each other.

33. (New) The device of claim 21, wherein the MS-port comprises an opening permitting release of MS-analyte into the mass spectrometer.

34. (New) The device of claim 21, wherein the microchannel structure further comprises a zone having a separation medium downstream the sample inlet port and upstream the MS-port.

35. (New) The device of claim 21, wherein the microchannel structure further comprises a zone having a separation medium in which the zone coincides with the MS-port.

36. (New) The device of claim 21, wherein the sample inlet port and the MS-port coincide and comprise a separation medium and said microchannel structure also comprises a waste channel extending from said MS-port.

37. (New) The device of claim 34, 35, or 36, wherein the separation medium is selected from the group consisting of particles, inner surface of the zone, and plugs that permit through flow.

38. (New) The device of claim 34, 35, or 36, wherein the separation medium is capable of affinity binding an analyte or an analyte-derived entity produced in the microchannel structure.

39. (New) The device of claim 37, wherein the separation medium is group-specific.

40. (New) The device of claim 37, wherein the separation medium is a reverse phase adsorbent.

41. (New) The device of claim 21, wherein the microchannel structure further comprises a functional unit selected from the group consisting of a non-sample inlet port, a reaction zone, a pressure creating zone, a mixing zone, a separating zone, a concentrating zone, a purifying zone, a volume defining zone and a waste chamber.

42. (New) The device of claim 21, wherein the microchannel structure further comprises a valve that is overcome by increasing the force driving the liquid.

43. (New) The device of claim 42, wherein the valve is a hydrophobic break.

44. (New) The device of claim 21, wherein at least a part of the surface of the microchannel structure is hydrophilized providing a water contact angle of $\leq 40°$.

45. (New) A method of collecting an MS-analyte comprising the steps of:

(a) applying a liquid sample containing an analyte to a sample inlet port of a microchannel structure of a microfluidic device, wherein said structure comprises an outlet port (MS-port) that is capable of being interfaced with a mass spectrometer;

(b) passing the analyte or an analyte-derived entity produced in the microchannel structure into a separation zone downstream of the sample inlet port and upstream of the MS-port, wherein the separation zone contains separation medium that selectively captures the analyte or the analyte-derived entity;

(c) releasing the analyte or the analyte-derived entity from the separation medium by passing a desorption liquid through the separation zone where it desorbs the captured analyte or analyte-derived entity for transport downstream towards the MS-port; and

(d) collecting the MS-analyte in the MS-port,

wherein transport of liquid in at least part of the microchannel structure being performed by the application of centrifugal force.

46. (New) The method of claim 45, wherein the desorption liquid is transported by the application of centrifugal force.

47. (New) The method of claim 45, wherein capillary action, hydrodynamic pressure, or electrokinetics is used to transport liquid within at least a part of the microchannel structure.

48. (New) The method of claim 45 further comprising releasing the MS-analyte to the mass spectrometer from the MS-port to determine the mass of the MS-analyte.

49. (New) The method of claim 45, wherein the separation medium comprises ligand structures that are capable of binding to the analyte or the analyte-derived entity by affinity or reversible covalent bonds.

50. (New) The method of claim 45 further comprising washing the separation medium subsequent to step (b) but prior to releasing the analyte or the analyte-derived entity.

51. (New) The method of claim 45, wherein the analyte comprises lipid, carbohydrate, nucleic acid or peptide structure.

52. (New) The method of claim 45 wherein the analyte-derived entity is passed into the separation zone and further producing this entity in a reaction zone for derivatization subsequent to step a) but prior to step b).

53. (New) The method of claim 52, wherein derivatization comprises digestion or mass tagging.

54. (New) A method of collecting an MS-analyte comprising the steps of:

(a) applying the liquid sample containing an analyte to a sample inlet port of a microchannel structure of a microfluidic device, wherein said structure comprises an outlet port (MS-port) that is capable of being interfaced with a mass spectrometer;

(b) passing the analyte or an analyte-derived entity produced in the microchannel structure into a reaction zone downstream of the sample inlet port and upstream of the MS-port, wherein the reaction zone derivatizes the analyte or the analyte-derived entity;

(c) transporting the derivatized analyte or analyte-derived entity downstream towards the MS-port; and

(d) collecting the MS-analyte in the MS-port,

wherein transport of liquid in at least part of the microchannel structure being performed by the application of centrifugal force.

55. (New) The method of claim 54, wherein capillary action, hydrodynamic pressure, or electrokinetics is used to transport liquid within at least a part of the microchannel structure.

56. (New) The method of claim 54 further comprising releasing the MS-analyte to the mass spectrometer from the MS-port to determine the mass of the MS-analyte.

57. The method of claim 54, wherein the reaction zone derivatizes the analyte by digestion or mass tagging.

58. The method of claim 54, wherein derivatization comprises enzyme digestion.